{In Archive} West Lake Landfill: Batch 4 of EPA Responses to PRP Comments

Rich Kapuscinski to: Dan Gravatt 07/18/2011 09:21 AM

Cc: Audrey Asher, DeAndre Singletary, Matthew Jefferson, Doug Ammon

Archive: This message is being viewed in an archive.

Proposed replies are attached for your review and consideration.

EPA Additional Comment #49 Using RESRAD for cover materials EPA feedback_osrtiedits.docx

The following draft responses are acceptable as is.

EPA Addl 40 & 41 and MDNR 20 - Uranium Cleanup Level EPA feedback.doc

EPA Additional 43 - MARSSIM v UMTRCA EPA feedback.doc

Rich Kapuscinski

Rich Kapuscinski Thanks again for your help in identifying the com... 07/14/2011 01:13:27 PM

From: Rich Kapuscinski/DC/USEPA/US
To: Dan Gravatt/R7/USEPA/US@EPA
Cc: Audrey Asher/R7/USEPA/US@EPA, DeAndre Singletary/SUPR/R7/USEPA/US@EPA, Matthew Jefferson/R7/USEPA/US@EPA, Doug Ammon/DC/USEPA/US@EPA
Date: 07/14/2011 01:13 PM
Subject: West Lake Landfill: Batch 4 of EPA Responses to PRP Comments

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Thanks again for your help in identifying the comments that we have not yet addressed.

Proposed replies are attached for your review and consideration. Please let me know if any of the suggested substantive edits appear to be inappropriate, for example, based upon your better understanding of site conditions. I hope and expect that additional replies regarding Batch 4 comments will be forthcoming soon.

Rich Kapuscinski

[attachment "EPA Addl 8 - Stormwater EPA feedback_OSRTIedits.doc" deleted by Rich Kapuscinski/DC/USEPA/US] [attachment "EPA Addl 31 - Technology Evaluations EPA feedback_OSRTIedits.docx" deleted by Rich Kapuscinski/DC/USEPA/US] [attachment "Revised Section 4-2 - Technology Evaluation EPA feedback_OSRTIedits.doc" deleted by Rich Kapuscinski/DC/USEPA/US]

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[attachment "EPA Addl 35 - Onsite Cell Feasibility EPA feedback_osrtiedits.doc" deleted by Rich Kapuscinski/DC/USEPA/US]

Dan Gravatt	Rich, Here are the Batch 4 comments that direct...	07/12/2011 02:50:50 PM
Rich Kapuscinski	To help us prioritize our efforts, could you pleas...	07/12/2011 08:47:38 AM
Dan Gravatt	Rich, Here is the Region's proposed feedback o...	06/22/2011 09:42:44 AM
Rich Kapuscinski	Would you please provide Region 7's proposed r...	06/21/2011 01:32:30 PM

EPA Additional Comment #49.

Comment:

Appendix F, page 11, last paragraph: The report needs to either provide the rationale for using RESRAD, rather than the PRG calculator, in that situation or rerun the assessment using the PRG calculator.

Discussion:

As stated in the opening sentence of Section 4.3.4.2: *"The EPA method described in the previous section does not evaluate risks from buried materials."* The method under discussion will be clarified in the text. Since the PRG calculator does not calculate risks from a covered source an alternate method must be used.

Proposed Text Change:

The first sentence in Section 4.2.4.2 (the correct section in the new version) in the revised Appendix F has been changed to:

> EPA's PRG calculator calculates risks from radionuclides in surface soils. The PRG calculator does not evaluate risks from buried materials.

EPA FEEDBACK:

The report should provide additional rationale for using RESRAD. The statement that the PRG calculator does not evaluate buried materials is acceptable, but is not sufficient because there may be other publicly available models that evaluate buried materials.

Deleted: EPA accepts this response.

EPA Additional Comments Nos. 40 and 41 and MDNR Section-Specific Comment No. 20 – Uranium Cleanup Level

Comments

EPA Additional Comment No. 40

40. Page 9: The risk-based cleanup level for uranium should not be above background. This is inconsistent with EPA's Role of Background policy. The risk based cleanup level should be expressed as a single concentration which includes background.

EPA Additional Comment No. 41

41. Page 9: To comply with EPA policy, cleanup levels for uranium should be expressed both in terms of mass for total uranium non cancer risk, and activity per uranium isotopes for cancer risk. The non-cancer risk-based level of total uranium should be stated, along with a concise comparison to the cancer-based level and a declaration of which is lower and governs the cleanup.

MDNR Section-Specific Comment No. 20

20.) Section 2.2.2 Cleanup Levels, page 9 - The last sentence of the first paragraph states, "Additional discussion regarding the development of the uranium remediation level is presented in the SFS Work Plan." As stated in previous comments on the SFS Work Plan, the Department would like to see a detailed risk calculation of the uranium cleanup level of 50 pCi/g included in this SFS. It is the Department's understanding that the uranium cleanup level is a risk-based value and that background concentrations should not be added to it to attain a cleanup goal.

Discussion

As suggested in EPA's May 9, 2010 letter commenting on the Draft SFS Work Plan and EPA's subsequent May 21, 2010 letter regarding MDNR's comments on the Draft SFS Work Plan, the cleanup level for uranium is based on the cleanup criteria for unrestricted use and unlimited exposure established for the North St. Louis County FUSRAP sites. This cleanup level is 50 pCi/g above background for U-238 calculated using U-238 as a surrogate for total uranium. As indicated in the EPA letters referenced above, the basis for this cleanup level is described in Section 2.8.2 – Derivation of Remediation Goals of the ROD for the North St. Louis County sites (USACE, 2005), and in the St. Louis Airport Site (SLAPS) Record of Decision (EPA, 2005).

Review of these documents indicates that the cleanup level for U-238 (as a surrogate for total uranium) at these sites was defined to be 50 pCi/g above background. Consequently, the EPA-approved SFS Work Plan indicated that for purposes of the SFS, a uranium remediation goal of 50 pCi/g above background would be used. As such, this cleanup value was presented and used in the Draft SFS report. In response to the comment, although derivation of the cleanup value will include incorporation of background concentrations, the actual cleanup values presented in the revised SFS will be single values that incorporate background. In the case of uranium, the cleanup level will be identified as 54.5 pCi/g for total uranium.

EPA's prior non-carcinogenic screening level for uranium was 620 mg/kg. This value was used in the evaluation of residual risks included in the draft SFS report. Subsequent to issuance of the draft SFS report, EPA revised the non-carcinogenic screening level. EPA's current non-carcinogenic screening level for uranium is 3,100 mg/kg (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/).

Of the isotopes of natural uranium, uranium-238 accounts for more than 99 percent of the mass of uranium. The mass concentration of uranium can be calculated by dividing the uranium-238 activity level in picocuries per gram (pCi/g) by the specific activity of 0.336 pCi/μg, resulting in a mass concentration of mg of uranium per kg soil (mg/kg). Based on the natural isotopic abundance of urainium-238, almost half of the total activity (~23.9 pCi/g) of naturally occurring uranium is attributable to the radioactive decay of uranium-238. Using the method described in the Baseline Risk Assessment, the mass concentration corresponding to 50 pCi/g of total uranium (Utot) may be calculated as:

= 50 (pCi Utot /g soil) x 23.9 (pCi U-238) / 50 (pCi Utot / 0.336 μg Utot /pCi U-238
= 71.1 ug/g soil ≈ 71 mg/kg soil.

Since the non-carcinogenic screening level for elemental uranium is 3,100 mg/kg, at a mass concentration of 71 mg/kg in soil, the hazard quotient calculated for this mass concentration will be < 1 and therefore will not require remediation. Consequently, the cleanup level of 54.5 pCi/g derived from the North St. Louis County sites based on carcinogenic risks represents the more conservative cleanup target.

EPA's preliminary remediation goal (PRG) risk calculator was used to calculate risks to selected receptors from surface deposits of uranium-bearing soil. The following table contains the information necessary to calculate risks from 50 pCi/g of uranium. The first column lists the three isotopes that make up uranium in nature. The second column lists the activity concentration of each isotope found in 50 pCi/g of natural uranium in soil. The third column lists the PRGs, which are the soil concentrations that EPA's PRG risk calculator generates for their default outdoor worker scenario (10^{-6} risk). The last column contains the risk from the activity listed in column 2. The calculated radiogenic risk from soil containing 50 pCi/g of natural uranium is presented as the last entry in the last column (1.5×10^{-5}).

Calculated Risks to Outdoor Workers from 50 pCi/g Natural Uranium

Isotope	Activity (pCi/g soil)	PRGs (pCi/g soil/10^{-6} risk)	Unit Risk [risk/(pCi/g soil)]	Risk (risk/50 pCi/g)
U-234	25.0	$3.23 \times 10^{+1}$	3.10×10^{-8}	7.8×10^{-7}
U-235+D	1.1	$3.43 \times 10^{+1}$	2.92×10^{-8}	3.2×10^{-8}
U-238+D	23.9	$1.65 \times 10^{+0}$	6.06×10^{-7}	1.4×10^{-5}
$U_{nat, total}$	**50**	**na**	**na**	**1.5×10^{-5}**

nc = Not calculated

As indicated in EPA's January 24, 2011 letter regarding MDNR comments on the Draft SFS report in response to MDNR Section-Specific comment No. 20, the SFS will note that the detailed risk calculations for the uranium cleanup level of 54.5 pCi/g requested by MDNR are available in Section 2.1.2 of the Record of Decision for the St. Louis Airport site and need not be re-stated in the SFS for West Lake Landfill. Discussion of background levels raised by this comment is addressed elsewhere in response to other comments raised by MDNR.

SFS Text Revisions

Per the EPA-approved SFS Work Plan and as described in the SLAPS and North St. Louis County Sites RODs, the cleanup level for uranium to be used in the SFS will be 54.5 pCi/g. Per EPA's January 24, 2011 letter, the basis for using the 50 pCi/g above background value as presented in the SLAPS and North St. Louis County Sites RODs will not be repeated in the revised SFS report.

In response to EPA Additional Comment No. 41, the following language will be added to the end of discussion of the uranium cleanup level:

A remediation goal of 50 pCi/g is equivalent to a mass-based uranium concentration of 71 mg/kg. EPA's current non-carcinogenic screening level for uranium is 3,100 mg/kg (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/). Consequently, cleanup of uranium to 50 pCi/g plus background should not pose any non-carcinogenic risks. Therefore, the cleanup level of 54.5 pCi/g derived for the SLAPS and the North St. Louis sites based on carcinogenic risks represents the more conservative cleanup target.

EPA FEEDBACK:
EPA accepts this response and the proposed text changes.

EPA Additional Comment No. 43 – Buffer Zone/Crossroad Survey

Comment

EPA Additional Comment No. 43

43. Page 57, third paragraph: This section states that the design-phase survey will be conducted using 40 CFR 192 and MARSSIM. Since the approach in 40 CFR 192 uses an average, while MARSSIM uses statistical tests, the current draft is ambiguous about how this would be accomplished. When discussing the 5 pCi/g standard in the document to define the RIM, the final report needs to clearly indicate which approach is being used: 40 CFR 192 area averaging, MARSSIM statistical test, or a not-to-exceed approach. See also page 60, third paragraph, first bullet. The final document should be clear about whether a statistical test, MARSSIM (40 CFR 192), a not-to-exceed approach, or another approach will be used.

Discussion

The discussion presented in the third paragraph on page 57 of the draft SFS only relates to the procedure to be used to conduct additional investigation/assessment of the Buffer Zone/Crossroad Property. As discussed elsewhere in the SFS and in responses to other comments, sampling performed during the RI identified the presence of radionuclides in surface soil on these properties, apparently due to historic erosional failure and transport of soil from Area 2 onto these properties. Subsequent to collecting the RI samples, an adjacent business contracted to have these properties graded and gravel placed on these properties to support use of these properties for parking of truck trailers. During this activity surficial soil, including soil containing radionuclides, was scraped from the surface and placed in stockpiles on these properties, which were subsequently relocated onto the Buffer Zone. Consequently, no information is available regarding the presence and, if present, activity levels of radionuclides on these properties. Implementation of a MARSSIM survey was previously proposed as part of the remedial design activities for the ROD remedy in order to assess the current condition of these properties.

Performance of a MARSSIM survey on the Buffer Zone/Crossroad Property is only intended to provide data to allow for a characterization of the current conditions on these properties. A decision regarding the need for remedial actions and the approach to implementation of any actions on these properties would be based on the results of the MARSSIM survey. Implementation of a remedial action on these properties could be performed based on using a MARSSIM approach, the approach specified in the UMTRCA regulations for offsite properties, or a combination of the two (e.g., use of MARSSIM approach for the Crossroad property but use of an UMTRCA approach for the Buffer Zone property, assuming that excavation of the Buffer

Zone would be performed regardless for other reasons such as creation of a stormwater retention basin).

Ultimately, the approach that may be used to remove radiologically-impacted soil, if any still remains, from the Buffer Zone and/or Crossroad Property will be based on the results of the survey to be completed during remedial design. The physical disruption and dislocation of the soil in this area by an offsite business results in uncertainty regarding the current distribution of radionuclides on this property. The results of a survey may indicate that a MARSSIM statistical-based approach to cleaning up this property may not be appropriate. For example, the physical dislocation of the soil may invalidate use of statistical-based sampling techniques or may greatly increase the number of samples required such that a MARSSIM-based approach may not be cost effective. Use of a MARSSIM approach is dependent on obtaining sufficient representative background data, which given the highly developed and landscaped nature of the surrounding area properties may prove to be difficult.

The proposal to perform a MARSSIM survey on the Buffer Zone/Crossroad Property does not conflict with the UMTRCA based approach (as modified by the OSWER directives) specified by EPA in the SFS scope of work for assessment of potential "complete rad removal" alternatives. As required by the SOW for purposes of completing the SFS, an UMTRCA-type area averaging approach has been assumed for identification of the RIM above the cleanup levels specified in the SOW.

SFS Text Revisions

No changes to the SFS text are proposed.

EPA FEEDBACK:

EPA recommends adding a statement to the third paragraph of Page 57 clarifying that this design-phase survey discussion only applies to the Buffer Zone / Crossroads property. Otherwise, the response is acceptable to EPA.